



BLUE REVOLUTION:

Uncovering solutions that drive commercially viable aquaculture products for European market

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DIVERSIFY

- ▶ WP29&28: D28.1/D29.2/D29.5/D29.6/D29.7/D29.8 in progress



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FISH FOR THOUGHT



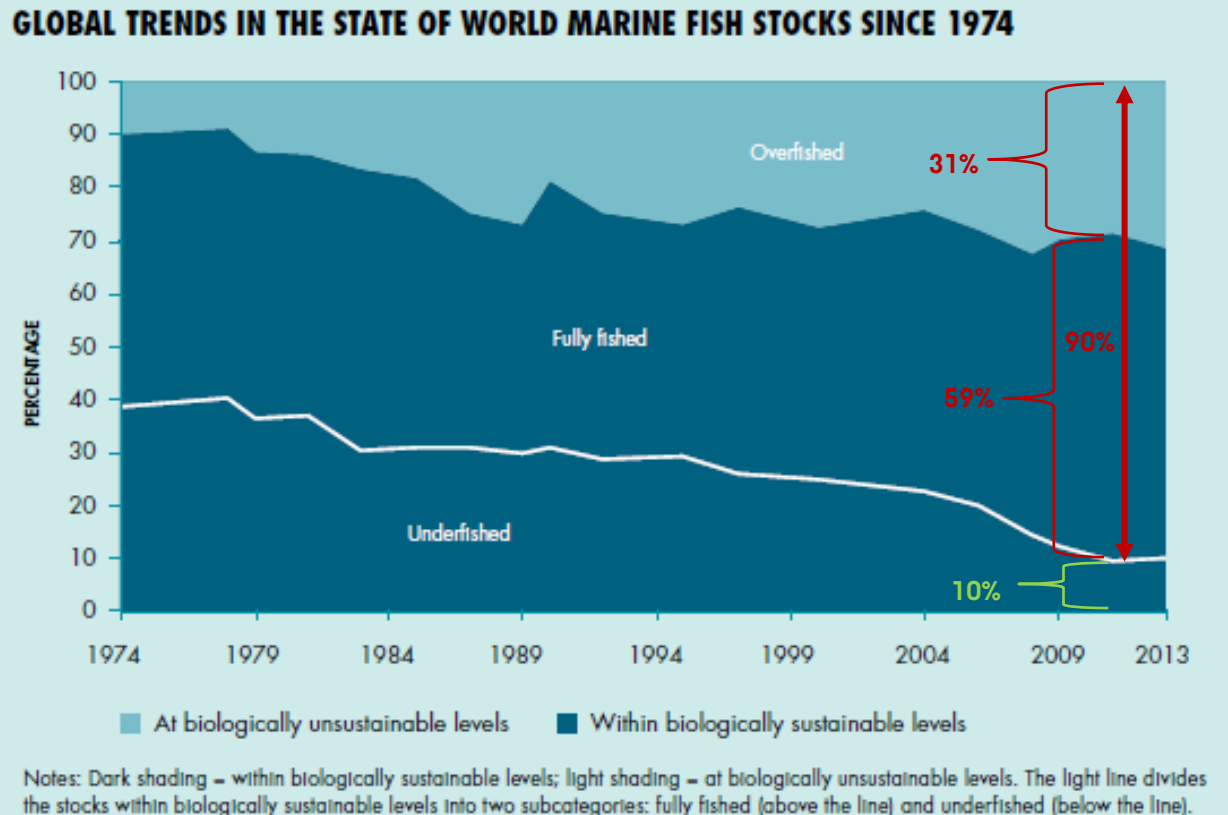
- ▶ How will consumers eat fish in the future?
- ▶ How to uncover solutions to address the needs of future consumers and migrate existing ones from the wild-fish products?



'SO LONG AND THANKS FOR ALL THE FISH'

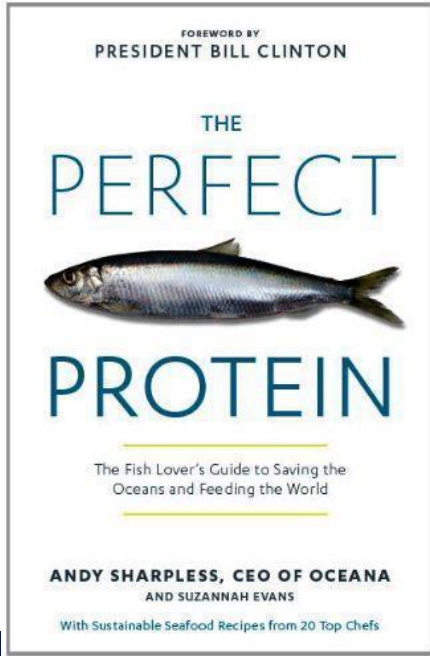


MAPP CENTRE - RESEARCH ON VALUE CREATION
IN THE FOOD SECTOR
DEPARTMENT OF MANAGEMENT
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The State of World Fisheries and Aquaculture, FAO (2016)

WHY BLUE REVOLUTION MATTERS?



WORLD FISH UTILIZATION AND SUPPLY

Fish utilization
(million tonnes) ←

↑ Spain ~46kg/capita
↑ EU28 ~25kg/capita

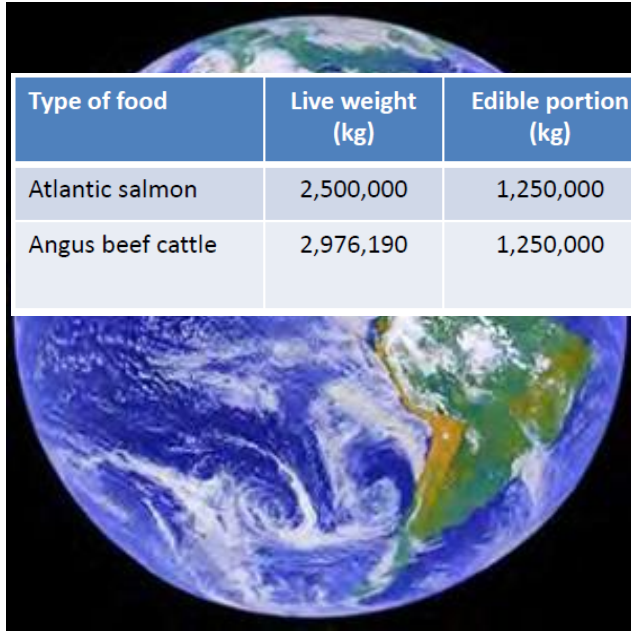
Population (billions)
and food supply (kg/capita)



■ Food
■ Non-food uses
— Population
— Food supply

FAO (2016)

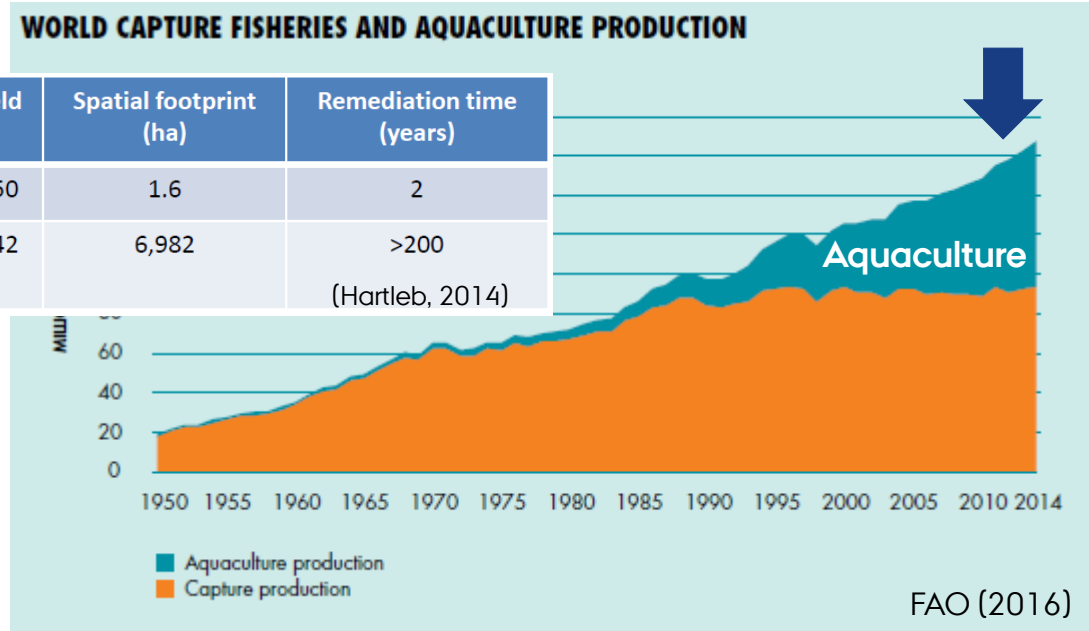
FOOD FROM DEEP BLUE TO FEED THE WORLD



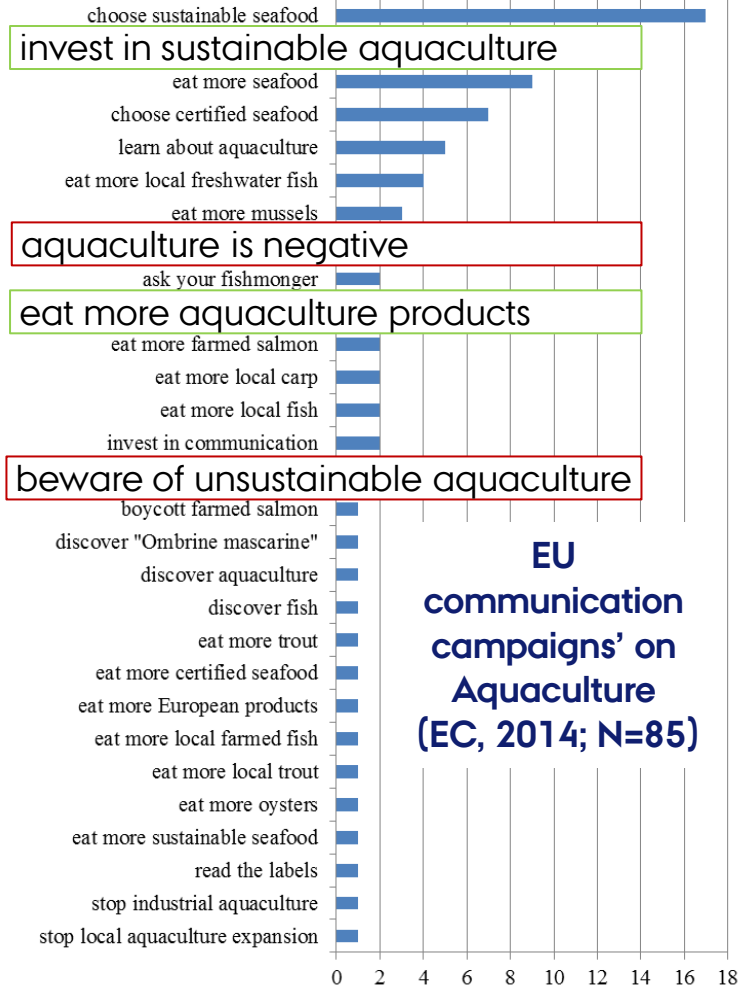
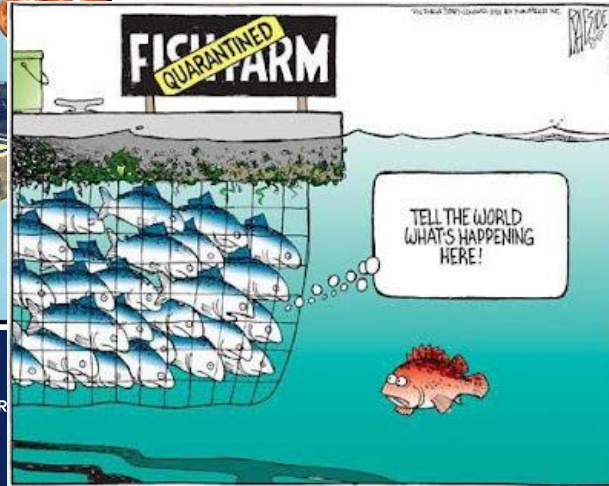
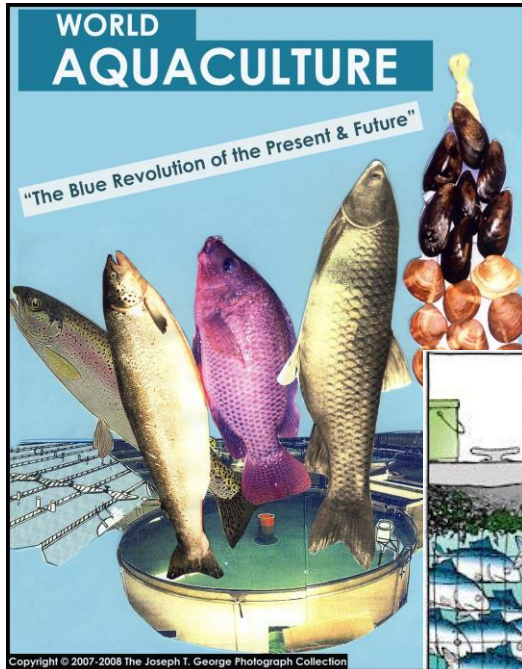
WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

Type of food	Live weight (kg)	Edible portion (kg)	Yield	Spatial footprint (ha)	Remediation time (years)
Atlantic salmon	2,500,000	1,250,000	0.50	1.6	2
Angus beef cattle	2,976,190	1,250,000	0.42	6,982	>200

(Hartleb, 2014)

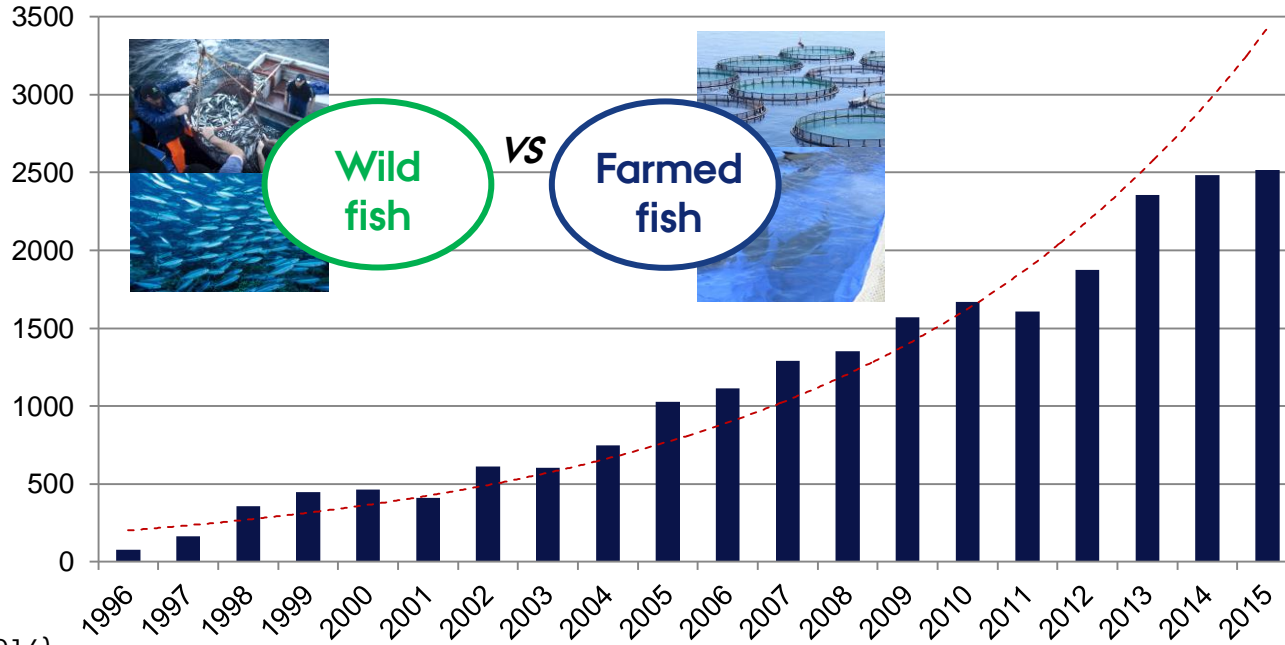


MIXED MESSAGES



FISHING FOR...

Newly launched fish products
(top 20 EU countries)



(Mintel, 2016)

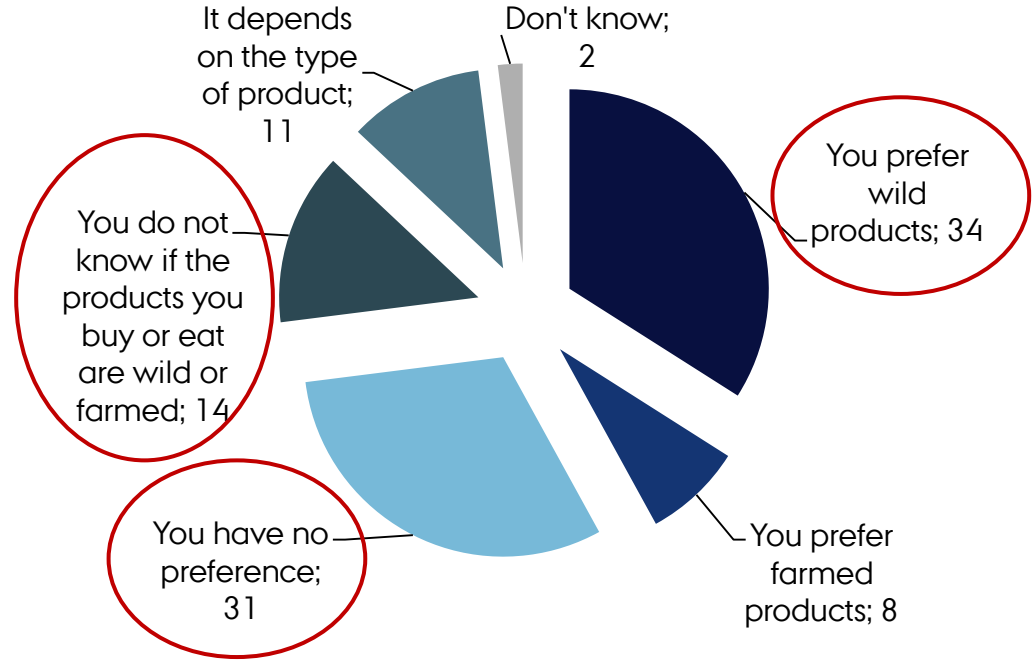


EVERYTHING CONSUMER NEED TO KNOW...



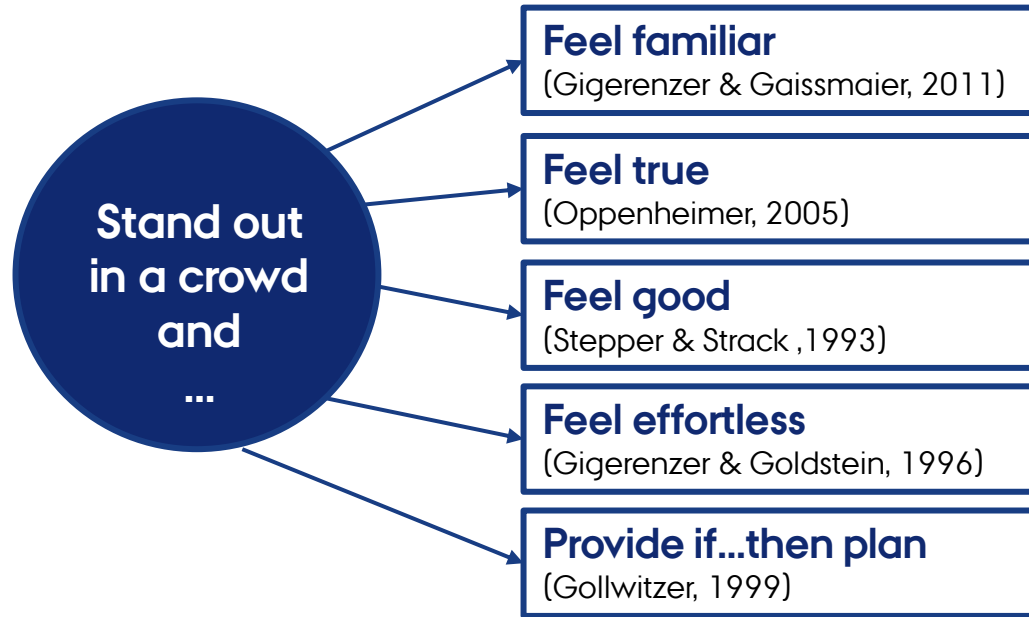
(Mintel, 2016)

AQUACULTURE PRODUCTS (IN)VISIBLE?



(Special Eurobarometer 450: EU28, N=24452; year 2017)

LIKELY TO IGNORE YOUR PRODUCT TOO...IF IT DOESN'T...



(Kahneman, 2003)

How can
aquaculture products
make a difference
and tell consumers...



CONSUMERS AS RESOURCE

- Involving the right consumer - Online survey in five focal EU fish markets (i.e. FR, GER, IT, SP & UK; N=2500)



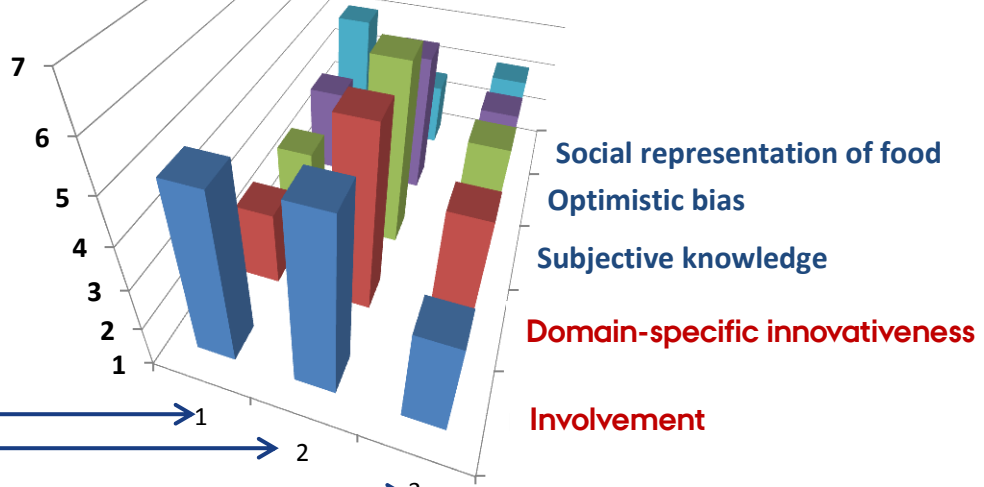
**Early adopters:
Consumers who count**



**Involved traditional
(N=728; 30%)**

**Involved innovators
(N=911; 36%)**

**Ambiguous indifferent
(N=872; 34%)**



CONSUMER AS CO-CREATOR



- Ten focus groups in five EU fish markets with early adopters (i.e. FR, GER, IT, SP & UK; N=60)

STRUCTURES THAT GIVE THEM CLEAR PROBLEMS TO SOLVE

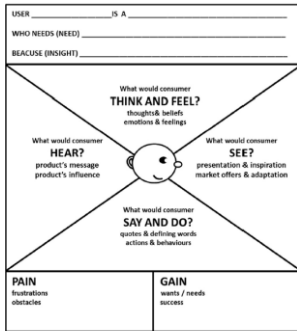
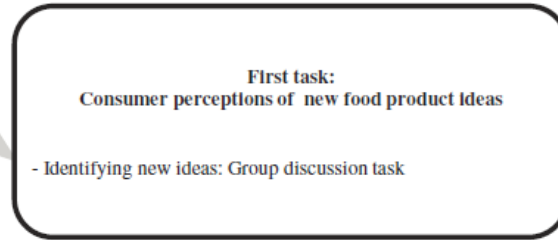


Fig. 3. Map used for the empathy task, adapted from Osterwalder and Pigneur (2010).



**STARTER IDEAS
EXPRESSED SIMPLY
AND CLEARLY**

**New ideas for aquaculture
product development**

**CREATIVE STIMULUS
TO DRAW INSPIRATION**

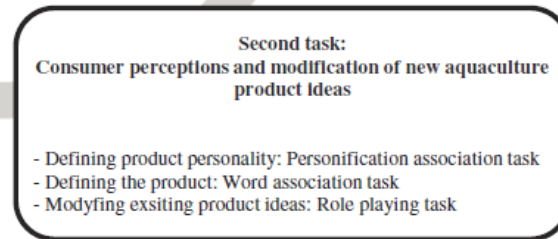
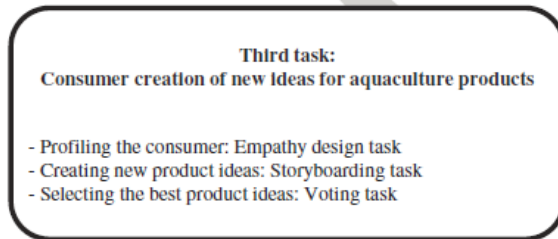


Fig. 2. Stimuli used for the role playing task.

Fig. 1. Research framework.

(Banovic et al, 2016a)

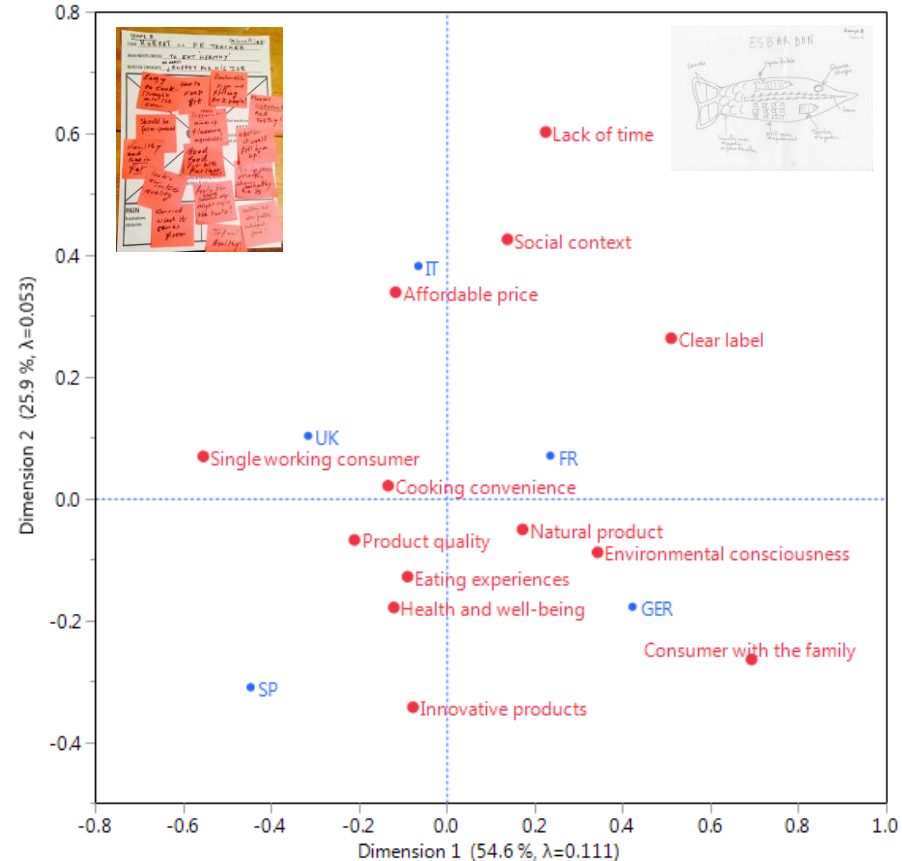
'ALL THE PLEASURE WITH LITTLE EFFORT'

'Happiness can be complete,
tasty and easy to cook'
(male and female group, Spain)

▶ Profiling the aquaculture consumer

- preference for products that are quick and easy to cook
- aquaculture products need to be natural, respect the environment and provide good eating experience
- benefits of the aquaculture products linked to the overall feeling of health and well-being

(Banovic et al., 2016a)



Fish species	Developed DIVERSIFY product prototypes	
Meagre	Idea 6: Fish burgers shaped as fish	(High processing)
	Idea 4: Ready to eat meal: salad with fish	(Low processing)
Pikeperch	Idea 9: Fish spreads/pate	(High processing)
Grey mullet	Idea 2: Thin smoked fillets	(Medium processing)
	Idea 33: Ready-made fish fillets in olive oil	(Medium processing)
Greater Amberjack	Idea 34: Fresh fish steak for grilling in the pan	(Low processing)

BUILDING PRODUCT PROTOTYPES

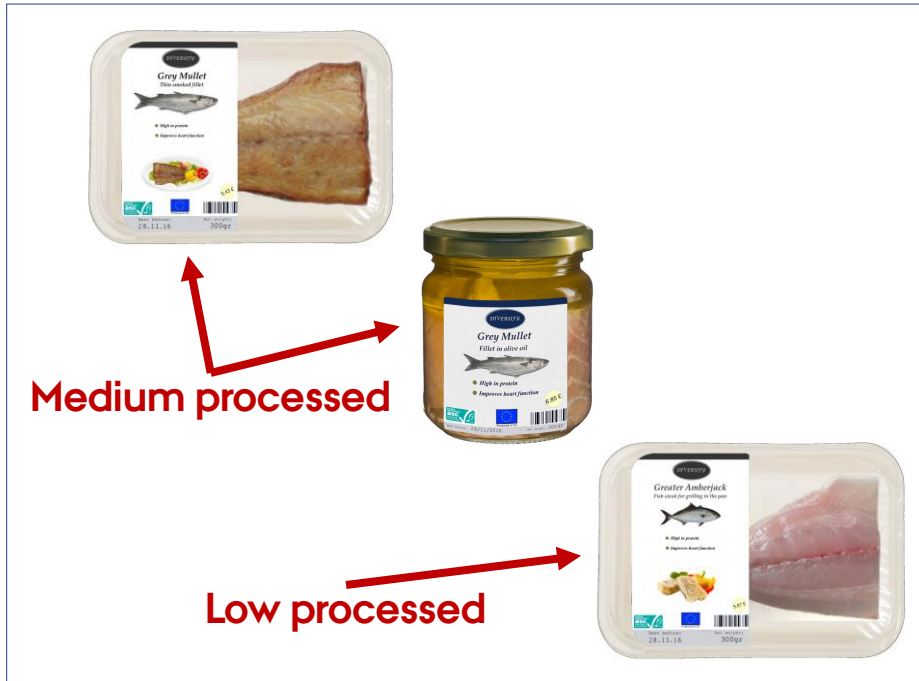
(Diversify - D28.4, D29.4, CTAQUA, IRTA, HCMR)



CONSUMER AS USER

- Continue working with consumer – Choice experiments in five EU fish markets, 3 products (i.e. FR, GER, IT, SP & UK; N=1500)

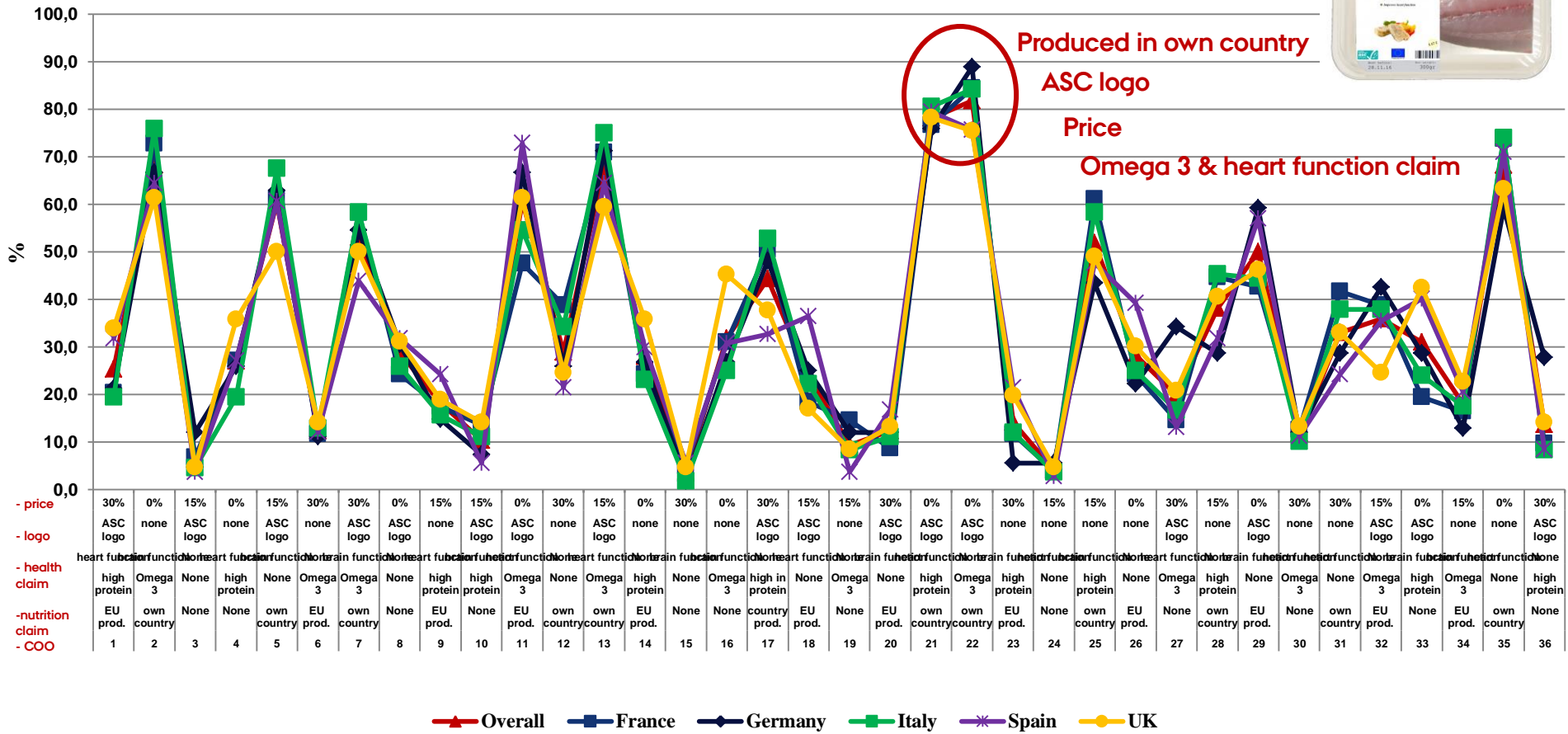
PRODUCT MOCK-UPS



ATTRIBUTE MANIPULATION



LIKELIHOOD OF CHOICES FOR NEWLY DEVELOPED MOCK-UPS



PERSUADING THE CONSUMER... MAKING 'PLEASANT' GOAL PURSUITS

- Communication experiments in five EU fish markets, 3 products – 9 experimental groups + control (i.e. FR, GER, IT, SP & UK; N=1565)

CHOOSE PRODUCTS FROM DIVERSIFY AQUACULTURE!

All products are made with the same attention to quality

Diversify aquaculture fish products come from a carefully selected group of finfish species and a production method that allows for both greater diversity of fish species and new value-added products. The fish species, such as Greater Amberjack, is selected based on its growth, size and excellent product quality. Fish are grown in large cylinder-shaped pools that float on the sea surface and reach down up to 20 meters depth. This sustainable method is used for rearing finfish species in coastal and open waters, within areas sheltered from excessive wave action, but with sufficiently deep water and fast current speeds where the water flows freely through the pools, and allows the fish to grow in clean and highly oxygenated water.

Diversify aquaculture is renowned for its high quality, sustainability and consumer protection standards.

With Diversify aquaculture imagine the benefits for you and your family!



GET HEALTHY PRODUCTS FROM DIVERSIFY AQUACULTURE!

Super-healthy fresh fish steak from Diversify aquaculture
for a healthier-happier day



GET TRACEABLE PRODUCTS FROM DIVERSIFY AQUACULTURE!

Transparent journey of smoked fish fillet from Diversify aquaculture
for a responsible tomorrow

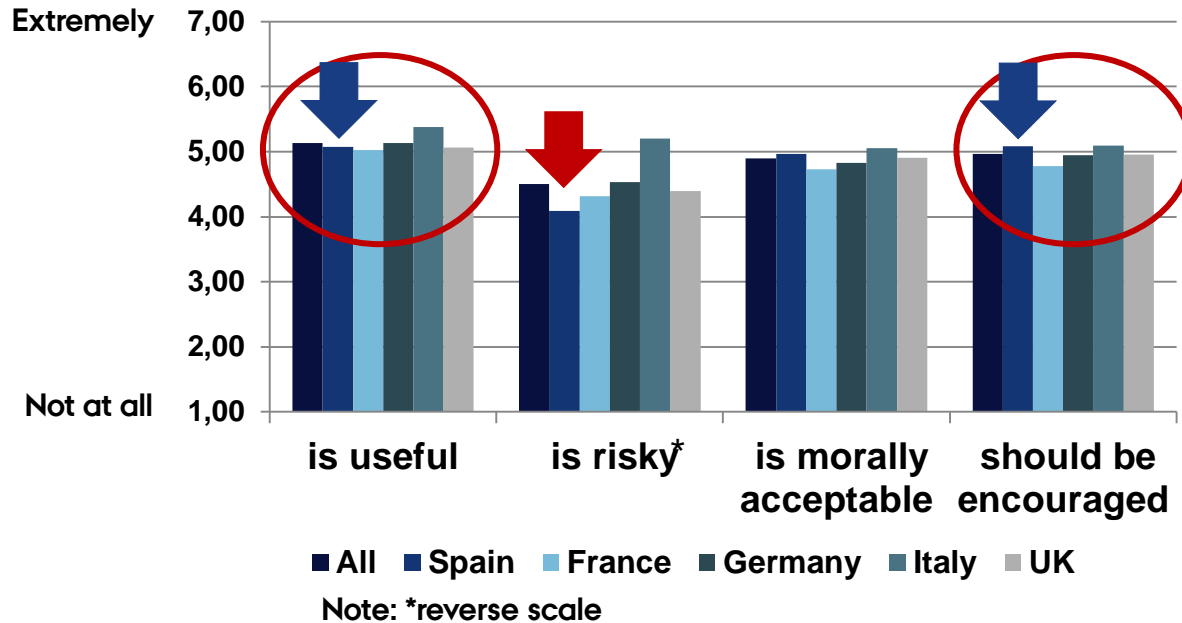


GET TASTY PRODUCTS FROM DIVERSIFY AQUACULTURE!

Super-tasty fish burger from Diversify aquaculture
for a great moment

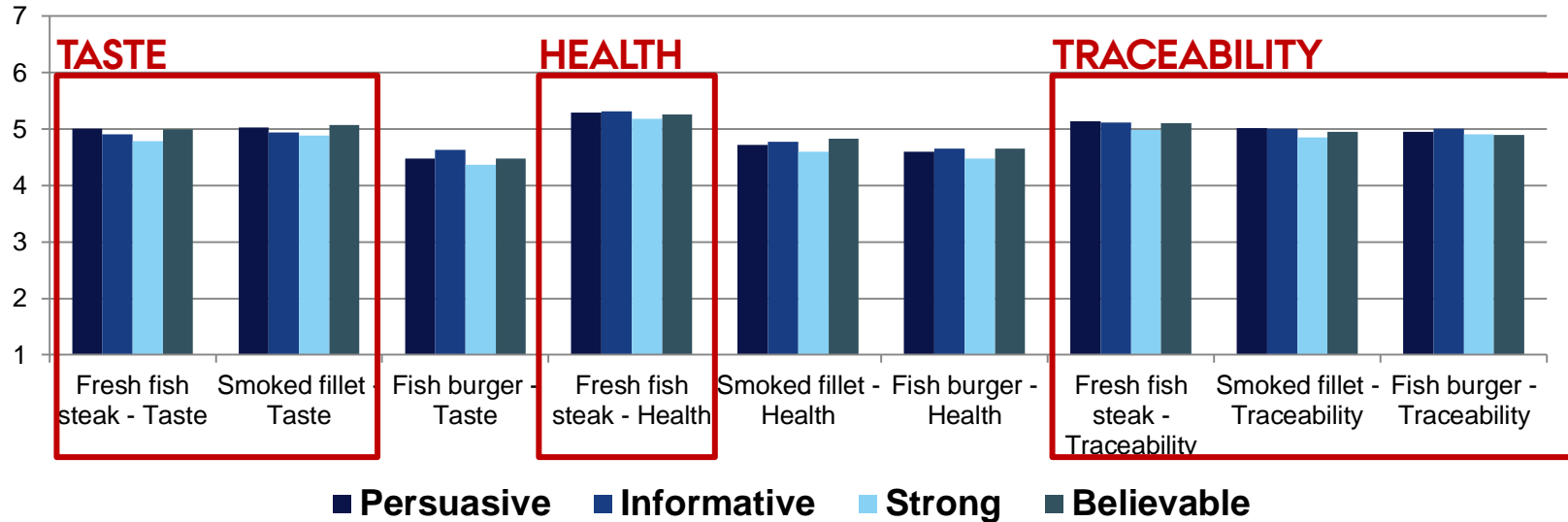
(Banovic et al., 2017c; D29.7; D29.8, AU)

DIVERSIFY AQUACULTURE...



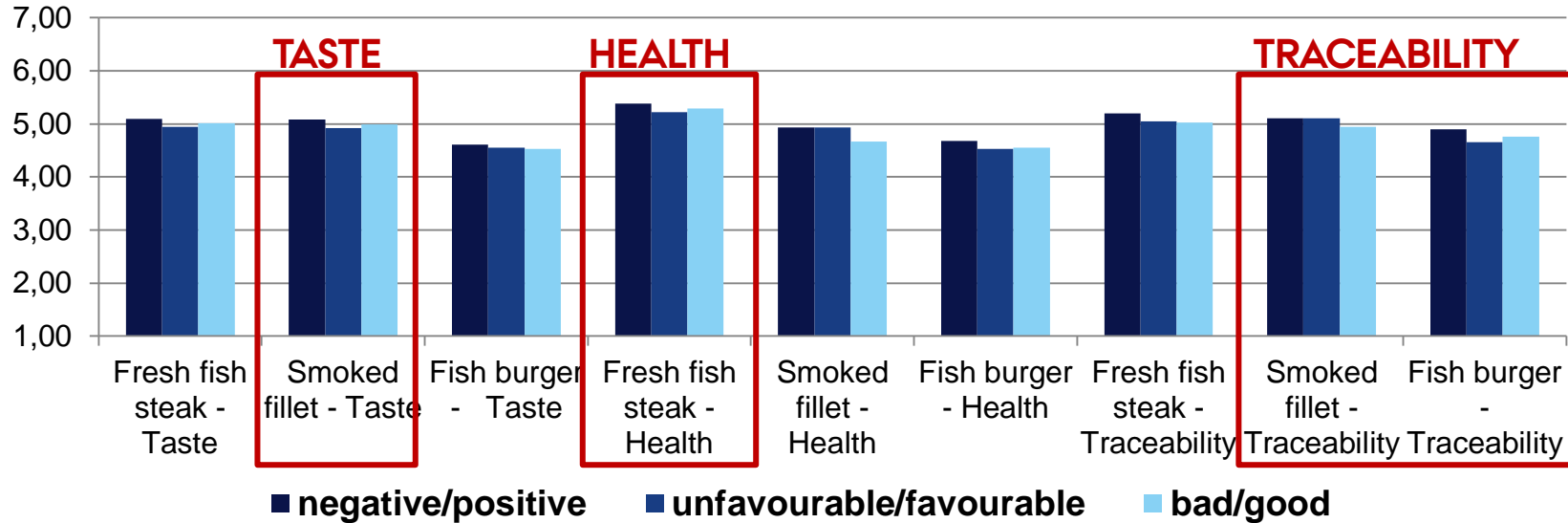
(Banovic et al., 2017c; D29.8, AU)

AFTER READING THE MESSAGE...



(Banovic et al., 2017c; D29.8, AU)

ATTITUDES TOWARDS THE PRODUCT...



(Banovic et al., 2017c; D29.8, AU)

MANAGERIAL IMPLICATIONS

GOOD NEWS!

It is possible to create new aquaculture products targeting early adopters
ACROSS all big EU markets

- ▶ Homogeneous, converging fish-related culture, opportunity to fashion new product concepts at the cross-boarder European level
- ▶ Similar pattern in consumer choice-drivers, i.e.
 - > COR and price come first, followed by quality certification, while nutrition/health claims appear to have varying and minimal impact and are highly depend on the type of product (e.g. level of processing) and EU country
- ▶ Although...
 - > A certain degree of customisation needed for certain products and countries



WHAT DID WE LEARN FROM DIVERSIFY?

...visible
and viable
Aquaculture
products...

Need to feel familiar

(e.g. 'EU aquaculture is fresh', local and healthy.)

- Adapt information to the type of aquaculture, highlight the most valuable benefits and attributes (e.g. ASC logo)

Need to feel true (aquaculture overshadowed by legitimate doubts)

- Better link between environmental concerns, responsible consumption and aquaculture

Need to feel effortless

('Less is more, more is less'; 'All the pleasure with little effort')

- Less clutter - convenience at the purchase point and at home - branding, storytelling, recipes essential

Need to feel good

- Associations to responsible consumption and healthy diet, invoking different emotional states

Need to have if...then plan - goal directed action

- Facilitate product implementation - communicate what consumer should do ('where', 'when' and 'how')



BLUE REVOLUTION PROSPECTS

- ▶ Explore consumers *romantic notion of the nature* as potential for further development and growth of aquaculture production highly influenced by ethical concerns related to environmental and fish welfare issues
- ▶ The more we provide solutions for these consumers' concerns, the more positive value perceptions they will have towards aquaculture products, and the more likely it is that they will trust and buy these products (Banovic et al., 2016a,b,c)
- ▶ However, **never neglect the effect of functional value and sensory aspects** on consumer value perception and its impact on final acceptance of aquaculture products

"[...] *the wilderness is the salvation of the world.*"
(*Walden* by Henry David Thoreau, 1817-1862)

"*Happiness can be complete [...]*"
(male/female group, Spain, Banovic et al., 2016a)



Mortlake Terrace (1827), by J.M.W. Turner (1775-1851)

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration – DIVERSIFY (KBBE-2013-07 single stage, GA 603121)

<http://www.diversifyfish.eu/>



**THANK YOU
FOR
YOUR ATTENTION!**



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